

WHAT IS CLAIMED IS:

1 1. A method for detecting atrial fibrillation, comprising
 2 repetitively obtaining a plurality of groups of n successive RR
 3 intervals from a patient's heart potentials, n being a natural number greater than 1,
 4 defining a plurality of points in an n -dimensional space of numbers,
 5 each point representing one of said groups of n successive RR intervals, to form a
 6 characteristic distribution of said points,
 7 comparing said characteristic distribution with at least one normal
 8 distribution derived from a healthy heart, and
 9 generating at least one state signal representing the state of the heart
 10 from said deviation.

1 2. The method of claim 1, comprising
 2 calculating a virtual electronic two-dimensional scatter plot based on said RR
 3 intervals,
 4 electronically checking said scatter plot for the presence of a
 5 prescribed geometrical point structure, and
 6 actuating a visual display depending on the result of said electronic
 7 check.

1 3. The method of claim 2, wherein a plurality of state signals are
 2 generated, each successive state signal associated with an increased risk of atrial
 3 fibrillation correlating to increased divergence from said normal distribution.

1 4. An apparatus for detecting atrial fibrillation by the method of
 2 claim 1, comprising
 3 means for repetitively obtaining a plurality of groups of n successive
 4 RR intervals from a patient's heart potentials, n being a natural number greater than
 5 1,
 6 means for defining a plurality of points in an n -dimensional space of
 7 numbers, each point representing one of said groups of n successive RR intervals,
 8 to form a characteristic distribution of said points,

9 means for comparing said characteristic distribution with at least one
 10 normal distribution derived from a healthy heart, and
 11 means for generating a state signal representing the state of the heart
 12 from said deviation.

1 5. The apparatus of claim 4, wherein said state signal is generated
 2 so as to distinguish between at least three values representative of at least three
 3 degrees of deviation of said characteristic distribution from said normal distribution.

1 6. The apparatus of claim 5, comprising visual display means
 2 actuated by means of said state signal.

1 7. The apparatus of claim 6, wherein said visual display means
 2 includes a plurality of individual displays corresponding in number to the number
 3 of possible values of said state signal.

1 8. The apparatus of claim 7, wherein said visual display means
 2 includes an LCD device having a plurality of individually activatable units.

1 9. The apparatus of claim 4, comprising
 2 electrodes applied to the patient for deriving said heart potentials,
 3 analog circuit means connected to said electrodes and including a
 4 preamplifier, an electronic filter and a main amplifier, and
 5 digital circuit means including an A/D converter, a sample-and-hold
 6 stage, a memory which holds said normal distribution, and a microcontroller.

1 10. The apparatus of claim 9, wherein said microcontroller is adapted
 2 to generate a signal fed back to said preamplifier for controlling the gain thereof.

1 11. The apparatus of claim 9, wherein said microcontroller is adapted
 2 to generate a clock signal for controlling said A/D converter and said
 3 sample-and-hold stage.

1 12. The apparatus of claim 4, comprising a battery for powering said
2 analog and digital circuit means, and means for generating a warning signal if the
3 voltage of said battery falls below a predetermined value.

1 13. The apparatus of claim 12, further comprising means for
2 actuating said warning signal generating means if said state signal assumes a critical
3 value.

1 14. The apparatus of claim 13, wherein warning signal generating
2 means includes a visual display adapted to operate in a flash mode.

1 15. The apparatus of claim 13, wherein warning signal generating
2 means includes an audio signal generator.